

# BREAST CANCER SUMMARY

## (Updated October 2004)

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### INTRODUCTION

*In 2001, 3,986 Wisconsin women were diagnosed with invasive breast cancer and 821 women died from the disease. This paper summarizes information about breast cancer incidence, risk factors, prevention, mortality, and current research. Further reading of referenced materials and discussion of individual questions with medical experts are encouraged.*

### WHO GETS BREAST CANCER?

**General Incidence.** Breast cancer is the most common cancer among women in the United States. In Wisconsin, breast cancer accounts for approximately 33 percent of all female cancer cases. In 2001, there were 4,687 new cases of *pre-invasive and invasive* female breast cancer reported to the Wisconsin Cancer Reporting System (WCRS). Approximately sixty-eight percent of these cases were diagnosed at the earlier stages (in situ or local), 28 percent were diagnosed at more advanced stages (direct extension, regional, or distant), and 4 percent were reported as unknown in stage. The 2001 Wisconsin age-adjusted incidence rate for all **invasive** breast cancers was 134 per 100,000 female population. (See definitions for description of age-adjusted rates, including the standard population used.)

### Demographics

**Age.** The incidence of breast cancer increases with age. At age 50, a woman's chance of ever developing breast cancer is about 1 in 7; up to age 39, her chance is 1 in 229; from age 40 to 59, her chance is 1 in 24 and from age 60 to 79, her chance is 1 in 13 (1). Generally, over 75 percent of breast cancer diagnosed in the United States occurs in women 50 and older. In 2001, 80 percent of women who developed breast cancer in Wisconsin were 50 and older.

**Race.** According to the National Cancer Institute, national statistics for 1997-2001 indicated that white women were more likely to develop invasive breast cancer (141 cases per 100,000

population) than African-American women (120 cases per 100,000 population). However, African-American women were more likely to die of breast cancer (35 deaths per 100,000 population) than white women (26 deaths per 100,000 population) (2). Other racial/ethnic groups in the U.S. had relatively lower breast cancer incidence rates for that five-year period: Asian/Pacific Islander women had a rate of 97 per 100,000; Hispanic women, 90 per 100,000; and American Indian women, 54 per 100,000. Breast cancer mortality rates were dramatically lower for Asian/Pacific Islander (13 per 100,000), Hispanic (17 per 100,000) and American Indian (14 per 100,000) women.

In Wisconsin during 1997-2001, white women had a higher incidence rate (135 per 100,000) than African-American women (121 per 100,000), but African-American women had a higher mortality rate (32 per 100,000) than white women (26 per 100,000). Similar to the national pattern, breast cancer incidence rates were lower for Asian/Pacific Islander women (92 per 100,000) and American Indian women (76 per 100,000). Mortality rates were dramatically lower among Asian/Pacific Islander women (9 per 100,000\*) and American Indian women (19.5 per 100,000\*). (*\*Rate based on five-year total of fewer than 20 cases and therefore may be less stable than rates based on larger numbers.*)

**Sex.** Men can develop breast cancer, although the incidence is very low. Of the 4,028 invasive breast cancer cases reported to the WCRS in 2001, only 42 (approximately 1 percent) occurred among males.

### ***HOW HAS THE OCCURRENCE OF BREAST CANCER CHANGED OVER TIME?***

**Stage of Diagnosis.** Breast cancer tends to be detected earlier today than ever before, largely because of increased use of mammography. In 1985, only 4 percent of breast cancer cases in Wisconsin were diagnosed at the earliest pre-invasive stage (in situ). The diagnosis of pre-invasive breast cancer increased dramatically, accounting for 15 percent of breast cancers diagnosed in 2001. This increase is attributed to increased mammography use (3).

**Incidence Trends.** The incidence for all stages (pre-invasive and invasive) of reported breast cancer has slowly increased over the last 10 years in Wisconsin, as well as nationally and internationally (4, 5). The 1990 age-adjusted incidence rate for Wisconsin was 129 cases per 100,000 population; the 2001 rate was 134 per 100,000. This general rise has been attributed to several factors, including more complete reporting, earlier detection and the general aging of the population.

### ***WHAT ARE THE RISK FACTORS FOR BREAST CANCER?***

**Race.** African-American women are more likely to die of breast cancer, because their cancers are often diagnosed at later stages and their tumors tend to be more aggressive (6).

A number of variables, or personal characteristics, may predict a potential for breast cancer. Breast cancer risk means the possibility of developing breast cancer. The American Cancer Society (7) suggests women assess their risks relative to the following known risk factors:

**Increasing age.** Approximately 95 percent of women with new diagnoses of breast cancer are over age 40. Breast cancer, like most other cancers, is age-related; incidence rises with increasing age.

**Family history of breast cancer.** Breast cancer in a first-degree relative (mother, sister, or daughter) is associated with the highest risk, but any breast cancer in the family should be considered a factor for increased risk.

**Genetic risk factors.** Approximately 5 to 10 percent of breast cancer cases are due to inherited mutations. Mutations of the BRCA1 or BRCA2 genes have been linked with 40 to 50 percent of all hereditary breast cancers. Especially for women with breast cancer in their families, tests for this genetic susceptibility are available.

**Personal history of benign or cancerous breast disease.** Women with breast cancer in one breast have a risk three to four times greater than the general population of developing cancer in the other breast. Women with benign breast disease (atypical hyperplasia) have a breast cancer risk four to five times that of the general population. \_\_

**Hormonal history.** Early age at menarche (before 12 years), late age at menopause (after 55 years), later age at first full-term pregnancy, and few or no pregnancies all increase the risk of breast cancer. Medical research suggests that these conditions result in longer lifetime exposure to estrogen, which promotes cell division in breast tissue and may result in mutations.

**Hormone replacement therapy (HRT).** The majority of recent studies indicate that hormone replacement therapy with estrogen, as well as with combined estrogen and progestin, increase the risk of breast cancer. Long-term HRT (5 -10 years) may increase the risk by 10 to 20 percent, and the risk increases with duration of use (8, 9).

**Obesity and high-fat diets.** Being overweight has been implicated as a risk factor for breast cancer. Large national and international studies have shown that obese women have higher incidence and mortality rates from breast cancer (10, 11, 12). A Harvard University study followed 95,000 women for 16 years and determined that obesity after age 18 contributed to breast cancer diagnosed years later in post-menopausal women. Breast cancer risk was found to be 40 percent greater for women who had gained 44 to 55 pounds after age 18, than for women who had only a five-pound fluctuation during adulthood (13).

**Alcohol.** Reported by the American Cancer Society, a review of more than 40 investigations found that consumption of alcohol increased breast cancer risk. Women who consumed approximately two drinks daily had increased their breast cancer risk by 21 percent (6).

### ***WHAT ARE THE MORTALITY AND SURVIVAL FIGURES FOR BREAST CANCER?***

**Recent mortality decline.** Female breast cancer mortality has slowly declined both in Wisconsin and nationally in recent years. From 1990 to 2000 the Wisconsin mortality rate dropped from 35 deaths per 100,000 women to 25 deaths per 100,000. Since 1990, United States female breast cancer mortality has declined an average of 1.8 percent per year (6). This improvement is attributed to earlier screening and detection, as well as improved treatment of breast cancer.

**Mortality perspective.** Breast cancer mortality should be kept in perspective with two other leading causes of death among women. Since 1987 lung cancer has surpassed breast cancer in causing deaths, attributed to the increase in smoking among women. Heart disease is still the greatest threat to older women and causes four times the number of deaths as breast cancer in women over the age of 55.

### ***WHAT FACTORS INFLUENCE SURVIVAL?***

**Stage at diagnosis.** Generally, the stage at which breast cancer is diagnosed is critical because survival rates increase proportionately with earlier detection. The five-year national survival rate is 97 percent when breast cancer is diagnosed at a local stage (confined to the breast), 80 percent when diagnosed at a regional stage (spread to surrounding tissue), and 25 percent when diagnosed at a distant stage (cancer has metastasized) (2).

**Age at diagnosis.** Although breast cancer is less common at a younger age (under age 45), survival rates are lower among young women, attributed to the fact that their breast cancer is more aggressive and less responsive to therapy (14). Five-year survival for women aged under 45 is 84 percent; for women ages 45-64, 88 percent; and for women ages 65-74, 89 percent (2).

**Time since diagnosis.** Women continue to die from breast cancer even after five years since diagnosis. Survival is 87 percent for all women at five years after diagnosis, 77 percent after 10 years, 65 percent after 15 years, and 52 percent after 20 years (2).

### ***HOW CAN BREAST CANCER BE PREVENTED OR CONTROLLED?***

The best strategies to prevent or control cancer are to follow the leading cancer organizations' guidelines for early detection, and reduce modifiable risk factors by making healthy lifestyle choices.

#### **Early Detection**

**Recommendations for screening.** The most recent guidelines, issued in 2003 by the American Cancer Society, recommend yearly mammograms for asymptomatic women 40 years and older. Women younger than 40 with known risk factors should also have annual mammograms, or regularly scheduled mammograms based on the extent of estimated risk determined jointly by patient and physician (15).

**Financial coverage.** Medicare provides insurance coverage for annual mammograms for all eligible women. In Wisconsin, the National Breast Cancer Early Detection Program, sponsored by the Centers for Disease Control and Prevention (CDC), supports the Wisconsin Well Woman Program in the Department of Health and Family Services. The Well Woman Program offers free screening to low-income women who are uninsured or underinsured. The program also targets women living in rural areas, and African American, Asian, Hispanic, and American Indian women (16). The Wisconsin Women's Health Hotline provides information and linkages to the Well Woman Program, as well as other organizations addressing women's health issues. (See listings below under *"Where To Find More Information."*)

**Mammograms.** According to the American Cancer Society, mammography is highly accurate and detects about 90 percent of breast cancers in women without symptoms, and is more accurate in postmenopausal women compared with pre-menopausal women (7). Improvement in rates of mammogram screening was reported by the national Behavioral Risk Factor Surveillance System (BRFSS). An average increase of 30 percent was reported from 1989 to 1995 in the use of mammograms among women age 40 and older. This analysis was based on data from 39 states, including Wisconsin, that participate in the CDC National Breast Cancer Early Detection Program (17). According to the 2002 Wisconsin Behavioral Risk Factor Survey (part of the BRFSS), 70 percent of Wisconsin women age 40 and older had a mammogram in the past year (18).

**Clinical breast examinations.** In addition to regular mammograms, breast examinations by trained medical professionals are important during annual physical examinations. ACS recommends clinical breast exams every three years for women ages 20 to 39 and annually for women age 40 and older (15).

**Monthly breast self-examination (BSE).** A woman who finds a mass or abnormality should be seen promptly for appropriate clinical evaluation. However, since 2003 ACS no longer recommends monthly breast self-examination beginning at age 20 and instead recommends that women be informed about potential benefits and limitations associated with BSE. This change from previous recommendations is based on limited evidence of the prognostic value of BSE, and the fact that lumps are more frequently detected by women during normal routine activities than during a monthly BSE. Also, clinical breast exams or mammograms are more effective in detecting early lumps (15).

**Early detection leads to breast conservation treatment.** Although 80 percent of breast biopsies are proven benign, a physician must evaluate any lump. Since 1992, the National Cancer Institute has recommended breast conservation therapy, or lumpectomy, often with radiation, for early-stage breast cancer. Long-term studies have shown that breast conservation therapy is preferable to mastectomy for cancer diagnosed at an early stage (19) and a recent study found no difference in 10-year survival between breast conserving therapy and mastectomy (20).

### **Lifestyle Choices - Diet and Exercise**

**Eat fruits and vegetables.** Since 1982, the National Research Council has recommended consuming fruits and vegetables for the prevention of all types of cancer (21). Some studies suggest that diets high in vegetables and fruits decrease the risk of breast cancer, although the evidence is weaker for breast cancer than for other cancers (22). Research in the 1990's found diets high in cruciferous vegetables (such as broccoli and cabbage) associated with anti-breast-cancer effects (23). A more recent analysis of several studies found no significant association between breast cancer and consumption of fruits and vegetables (24). Nutrition studies are difficult to interpret because the association is often weaker than for other risk factors (such as smoking and lung cancer risk), but a general protective effect against various cancers from fruit and vegetable consumption is consistent in many studies (25).

**Reduce dietary fat and avoid obesity.** While past studies were inconsistent in finding a link between fat in the diet and breast cancer, recent large studies from Harvard and Cambridge (26, 27) concluded that diets high in saturated fats are associated with a higher risk of breast cancer. A study conducted by the American Cancer Society showed overweight women were 60 percent more likely to die from breast cancer compared to normal-weight women (28), and the risk may

increase with weight gain after menopause (29). Currently, a high percentage of women are overweight or obese in the U.S., and therefore weight control has become an important preventive measure for breast cancer and other diseases.

**Limit alcohol consumption.** Moderate and heavy alcohol consumption is consistently associated with an increased risk of breast cancer (30, 31). The American Cancer Society recommends a limit of one drink per day for those women who drink alcoholic beverages (22). An analysis of several studies concluded that alcohol consumption is associated with increased risk for breast cancer, and that reducing alcohol consumption is a useful preventive strategy for regular consumers of alcohol (32).

**Exercise regularly.** Physical exercise has been associated with lower incidence of breast cancer in a number of studies (33, 34, 35). Longer duration and greater intensity of physical activity are both associated with a reduced risk of breast cancer. The American Cancer Society advises women to engage in vigorous physical activity for at least four hours each week (22).

### **Tamoxifen and Raloxifene - Breast Cancer Control and Prevention**

In 1998 the national Breast Cancer Prevention Trial showed a 49 percent reduction in breast cancer among high-risk women who took the drug tamoxifen (36). However, side effects included an increased risk of endometrial cancer, and should be taken into consideration. Women at increased risk of breast cancer should discuss the benefits and risks of taking tamoxifen with their physician (37).

The osteoporosis drug raloxifene has shown promise in reducing breast cancer, and the Study of Tamoxifen and Raloxifene (STAR) now in progress is designed to determine whether raloxifene is as effective in preventing breast cancer as tamoxifen has proven to be. One of the largest breast cancer prevention studies ever conducted, this five-year study recruited more than 19,000 postmenopausal women at more than 500 medical centers across the United States, Puerto Rico and Canada, and expects to announce results in 2005 (38).

### ***WHERE TO FIND MORE INFORMATION***

#### **Web sites and telephone numbers for general cancer topics, including breast cancer**

Wisconsin Women's Health Hotline

1-800-218-8408

Wisconsin Well Woman Program (WWWP)

[http://www.dhfs.state.wi.us/DPH\\_BCDHP/WWWP/index.htm](http://www.dhfs.state.wi.us/DPH_BCDHP/WWWP/index.htm)

University of Wisconsin Comprehensive Cancer Center

<http://www.cancer.wisc.edu>

Wisconsin Cancer Reporting System

<http://dhfs.wisconsin.gov/wcrs/index.htm>

National Cancer Institute Cancer Information Service

Telephone: 1-800-4-CANCER

National Cancer Institute Cancer Net Web site: <http://cancernet.nci.nih.gov>

American Cancer Society  
Telephone: 1-800-ACS-2345  
Web site: [www.cancer.org](http://www.cancer.org)

Centers for Disease Control and Prevention  
National Center for Chronic Disease and Health Promotion  
<http://www.cdc.gov/nccdphp>

Department of Health and Human Services  
National Women's Health Information Center  
<http://www.4woman.gov>  
Cancer News on the Net  
<http://www.cancernews.com>

Harvard Center for Cancer Prevention  
<http://www.hsph.harvard.edu/cancer/>

Mayo Clinic Cancer Library  
<http://www.mayohealth.org>

Johns Hopkins Comprehensive Cancer Center  
<http://www.hopkinskimmelcancercenter.org>

University of Pennsylvania Cancer Center- Oncolink  
<http://cancer.med.upenn.edu>

MEDLINE - National Library of Medicine- Cancer  
<http://www.nlm.nih.gov/medlineplus/cancer.html>

### **Web sites for breast cancer**

Breast Cancer Network Newsletter  
<http://www.breastcancer.net>

Centers for Disease Control and Prevention  
National Breast and Cervical Cancer Early Detection Program  
<http://www.cdc.gov/cancer/nbccedp>

National Breast Cancer Coalition  
<http://www.natlbcc.org>

Susan G. Komen Breast Cancer Foundation Cancer Information  
<http://www.breastcancerinfo.com>

John Hopkins Breast Center  
[www.med.jhu.edu/breastcenter](http://www.med.jhu.edu/breastcenter)

## ***DEFINITIONS***

**Age-adjusted rates** – The incidence (new cases) and mortality (deaths) per 100,000 population expected for Wisconsin if the state's age distribution were the same as that of the standard population. For the incidence and mortality rates in this report, the standard population used was the 2000 U.S. population. Age-adjusted rates allow comparisons between different population groups by controlling for the effects of age differences between populations.

**Cancer** – A group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death.

**Cancer diagnosis** – The detection of cancer based on symptoms or screening tests that confirm the presence of cancer cells. Diagnoses are based on the cancer site of origin; for example, a cancer originating in breast tissue is diagnosed as breast cancer, even if it has spread to other parts of the body.

**Cancer screening** – Checking for changes in tissues, cells or fluids that may indicate the possibility of cancer when there are no symptoms. Regular screening exams can result in the detection of cancers at earlier stages, when treatment is more likely to be successful.

**Cases** – The incidence of a reportable primary site of origin for cancer. A cancer patient may be diagnosed with more than one primary cancer. The number of cases in this report refers to the number of primary cancers, not the number of cancer patients.

**Cause** - Cancer is caused by both external (chemicals, radiation, and viruses) and internal (hormones, immune conditions, and inherited mutations) factors. Causal factors may act together or in sequence to initiate or promote cancer. Ten or more years may pass between exposures and detectable cancer.

**Incidence rate** – The number of new cancer cases of a specific site occurring in a specified population during a year, expressed as the number of cancers per 100,000 population. It should be noted that the numerator can include multiple cancer sites occurring in one individual and, except for in situ bladder cancer, excludes in situ cases. All incidence rates in this report are standardized to the 2000 U.S. population.

**Invasive cancer** - Malignant cancer or tumor that has invaded tissue or surrounding organs. Invasive cancer includes local, regional and distant stages of disease at the time of diagnosis.

**Mortality rate** – The number of deaths with cancer given as the underlying cause of death occurring in a specific population during a year, expressed as the number of deaths due to cancer per 100,000 population. All mortality rates in this report are standardized to the 2000 U.S. population.

**Rate** – The number of events occurring in a specific population during a given period of time. Rates in this report are age-standardized and expressed per 100,000 population.



**Risk factor** – Something that increases a person’s chance of developing a disease. Having a risk factor means a person has a greater chance of developing a disease than a person without the risk factor, but it does not predict with any certainty which individual will develop a disease.

**Stage of disease at diagnosis** – The stage of disease at diagnosis refers to the extent of the spread of disease at the time of diagnosis. The staging classification used in this report is the National Cancer Institute’s Summary Staging Guide for Cancer: Surveillance Epidemiology and End Results Reporting. The summary stages are defined as follows:

**In Situ** – A tumor that fulfills the microscopic criteria for cancer, but does not invade the surrounding tissues. This paper does not include in situ cases, but reports only invasive cancers. Most cancer publications exclude in situ cases, except for in situ bladder cancer.

**Local** – A malignant tumor that is confined to the organ of origin with no evidence of spreading to other parts of the body.

**Regional** – A malignant tumor that has spread beyond the limits of the organ of origin into adjacent organs or tissues by direct extension, or through regional lymph nodes, but appears to have spread no further.

**Distant** – A malignant tumor that has spread to parts of the body remote from the organ of origin.

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